

Product Summary

BV _{SSS}	R _{SS(ON)} Typ	I _S Max T _A = +25°C
12V	1.34mΩ @ V _{GS} = 3.8V	34A

Description

This new generation MOSFET is designed to minimize the on-state resistance (R_{SS(ON)}) yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Battery Management
- Load Switch
- Battery Protection

Features

- CSP with Footprint 3.00mm × 2.74mm
- Height = 0.275mm (Typical) for Low Profile
- ESD Protection of Gate
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com/quality/product-definitions/) or your local Diodes representative.

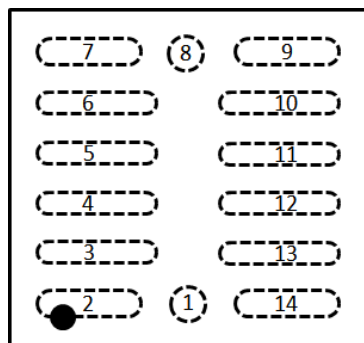
<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

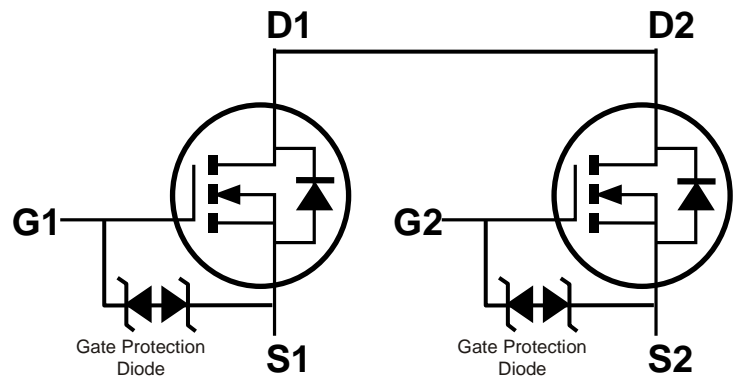
- Case: X2-TSN3027-14
- Terminal Connections: See Diagram Below
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — NiAu. Solderable per MIL-STD-202, Method 208 @4
- Weight: 0.0066 grams (Approximate)



Top View



Source 1: 2, 3, 4, 5, 6, 7
Gate1: 1
Source 2: 9, 10, 11, 12, 13, 14
Gate 2: 8



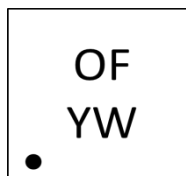
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN11M2UCA14-7	X2-TSN3027-14	3000/Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 - See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 - For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



OF = Product Type Marking Code
YW = Date Code Marking
Y or Y = Year (ex: 1 = 2021)
W or W = Week (ex: a = Week 27; z Represents Week 52 and 53)

Date Code Key

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	1	2	3	4	5	6	7	8	9	0	1	2

Week	1-26	27-52	53
Code	A-Z	a-z	z

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Source-Source Voltage			V _{SSS}	12	V
Gate-Source Voltage			V _{GSS}	±8	V
Continuous Source Current (Note 5) V _{GS} = 4.5V	Steady State	T _A = +25°C	I _S	34	A
		T _A = +70°C		27.5	
Continuous Source Current (Note 5) V _{GS} = 2.5V	Steady State	T _A = +25°C	I _S	25.5	A
		T _A = +70°C		20	
Pulsed Source Current (Note 6)			I _{SM}	80	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 7)	P _D	0.95	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 7)	R _{θJA}	132	°C/W
Power Dissipation (Note 5)	P _D	3.3	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 5)	R _{θJA}	38	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Source -Source Breakdown Voltage	BV _{SSS}	12	—	—	V	V _{GS} = 0V, I _S = 1mA
Zero Gate Voltage Drain Current T _J = +25°C	I _{SSS}	—	—	1	μA	V _{SS} = 10V V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±10 ±1	μA	V _{GS} = ±8V, V _{SS} = 0V V _{GS} = ±5V, V _{SS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(TH)}	0.35	0.75	1.4	V	V _{SS} = 10V, I _S = 0.87mA
Static Source-Source On-Resistance	R _{SS(ON)}	0.70	1.28	1.85	mΩ	V _{GS} = 4.5V, I _S = 9.8A
		0.75	1.34	2.0		V _{GS} = 3.8V, I _S = 9.8A
		0.80	1.45	2.38		V _{GS} = 3.1V, I _S = 9.8A
		0.90	1.65	3.40		V _{GS} = 2.5V, I _S = 9.8A
		—	—	—		V _{GS} = 0V, I _S = 9.8A
Diode Forward Voltage	V _{SS}	—	—	1.0	V	V _{GS} = 0V, I _S = 9.8A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	6083	—	pF	V _{SS} = 6V, V _{GS} = 0V, f = 1.0kHz
Output Capacitance	C _{oss}	—	1421	—		
Reverse Transfer Capacitance	C _{rss}	—	304	—		
Total Gate Charge	Q _g	—	71	—	nC	V _{DD} = 6V, V _{GS} = 4V, I _S = 9.8A
Gate-Source Charge	Q _{gs}	—	12	—		
Gate-Drain Charge	Q _{gd}	—	17	—		
Gate Charge at V _{TH}	Q _{g(TH)}	—	7	—		
Turn-On Delay Time	t _{d(ON)}	—	0.9	—	μs	V _{DD} = 6V, V _{GS} = 4V, I _S = 9.8A
Turn-On Rise Time	t _r	—	1.7	—		
Turn-Off Delay Time	t _{d(OFF)}	—	4.0	—		
Turn-Off Fall Time	t _f	—	3.6	—		

- Notes:
- Device mounted on FR-4 material with 1inch² (6.45cm²), 2oz. (0.071mm thick) Cu.
 - Repetitive rating, pulse width limited by junction temperature.
 - Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to production testing.

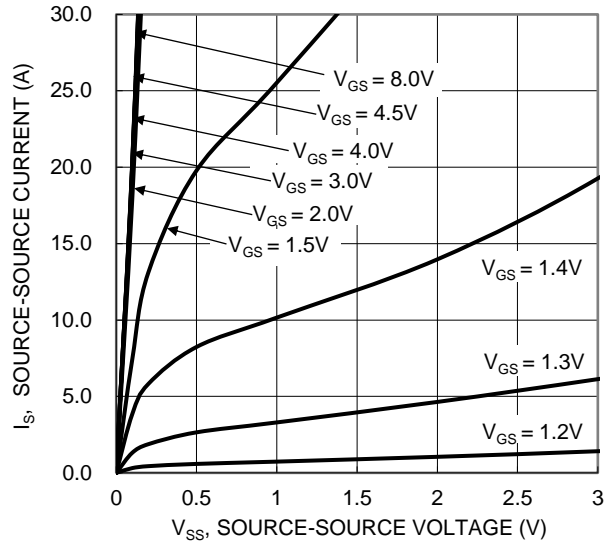


Figure 1. Typical Output Characteristic

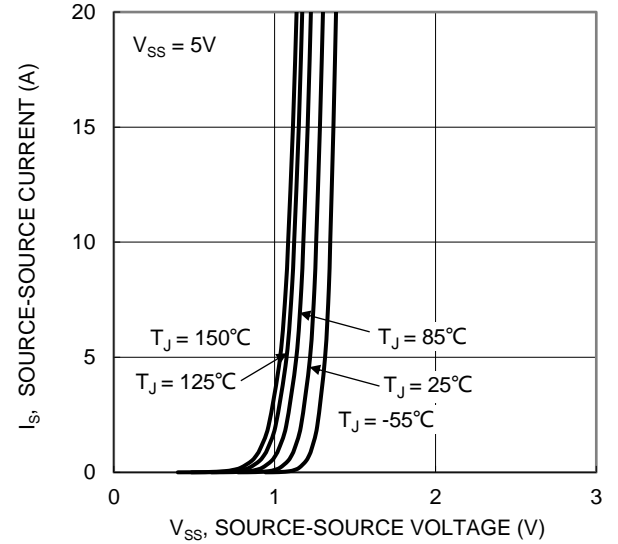


Figure 2. Typical Transfer Characteristic

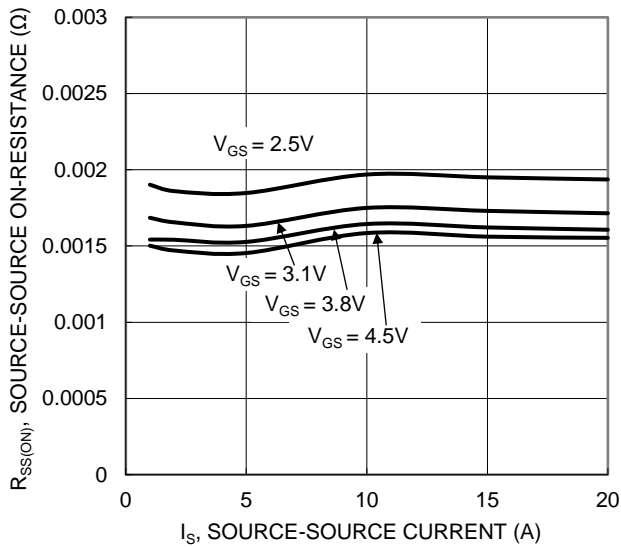


Figure 3. Typical On-Resistance vs. Source Current and Gate Voltage

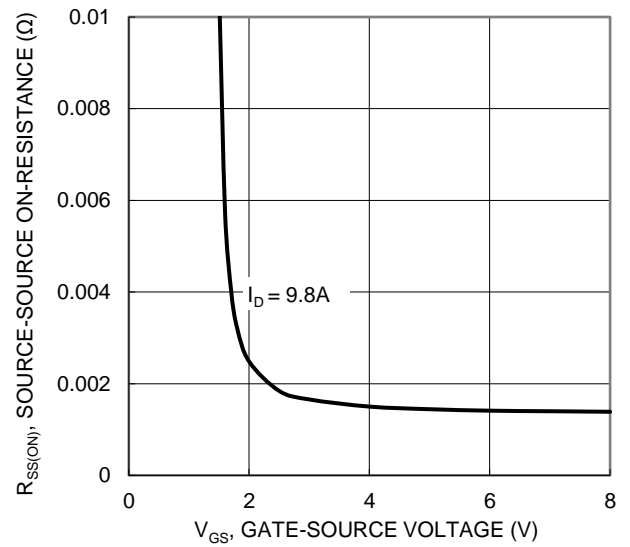


Figure 4. Typical Transfer Characteristic

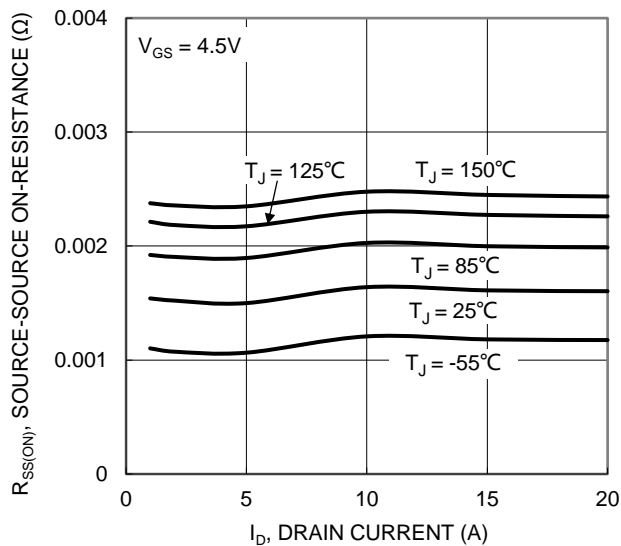


Figure 5. Typical On-Resistance vs. Source Current and Junction Temperature

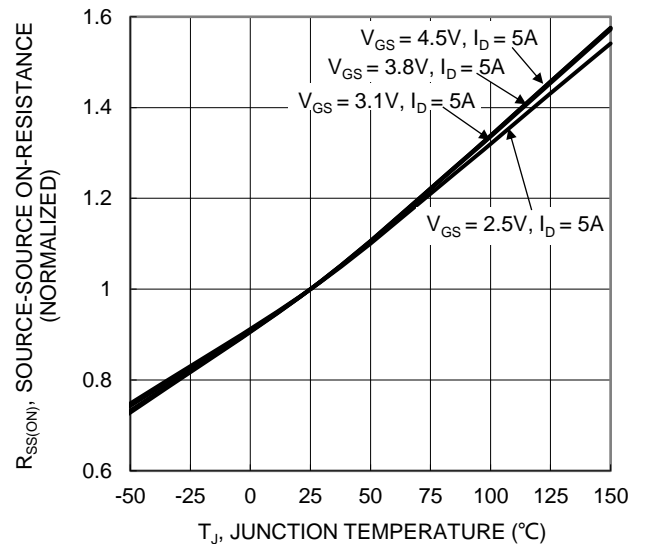
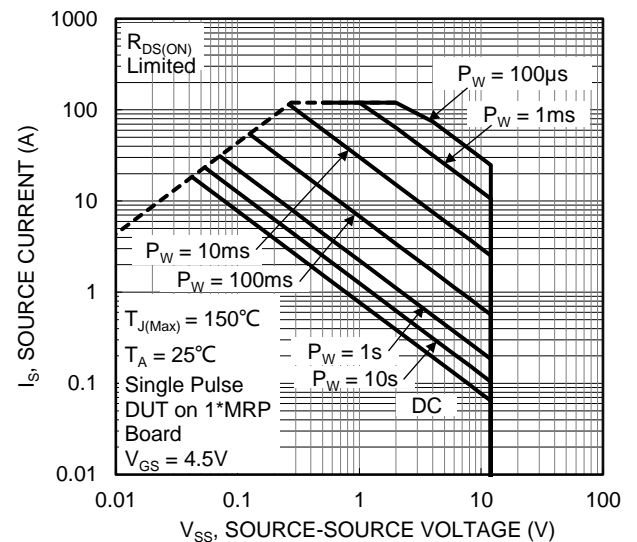
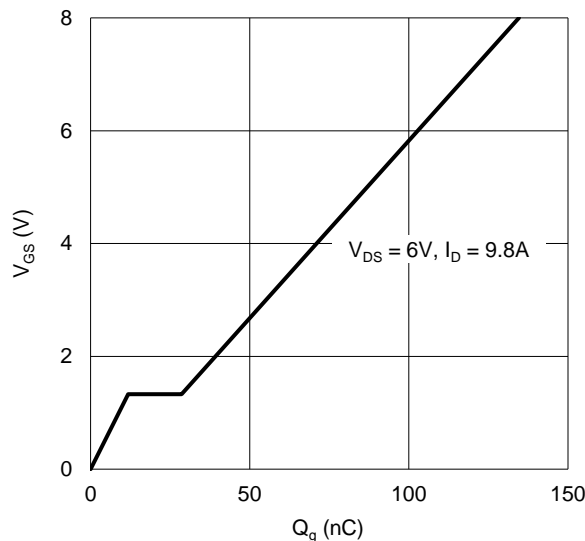
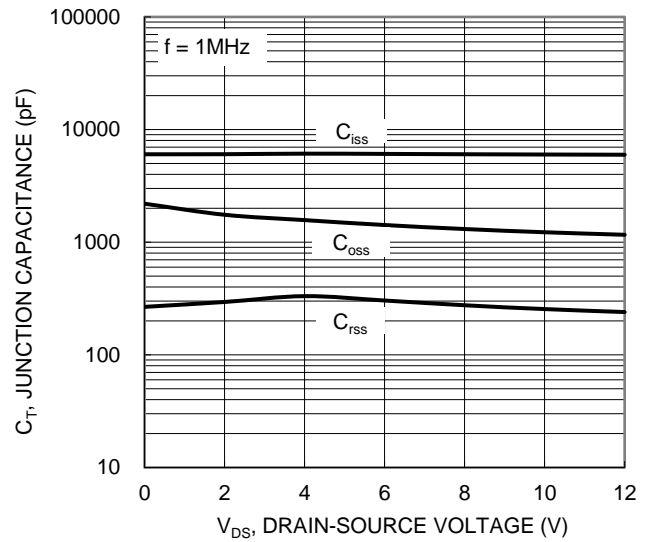
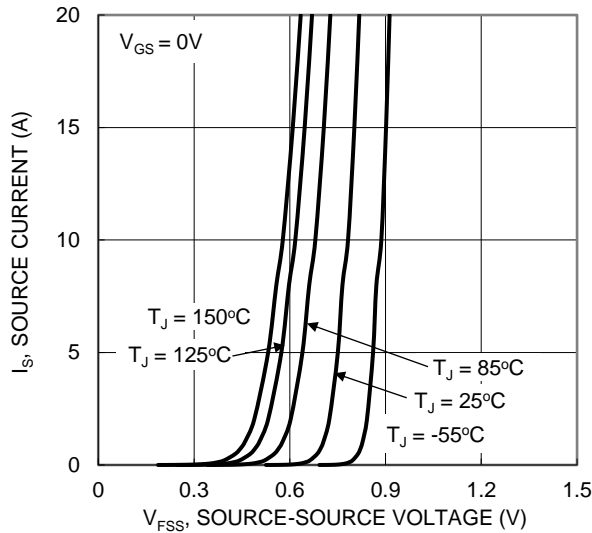
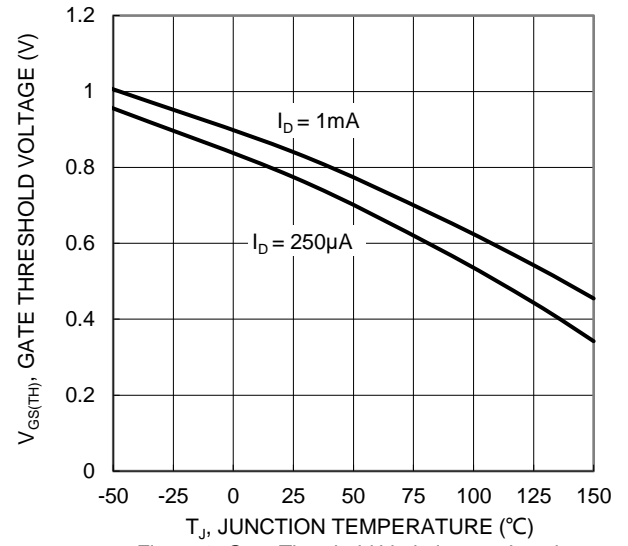
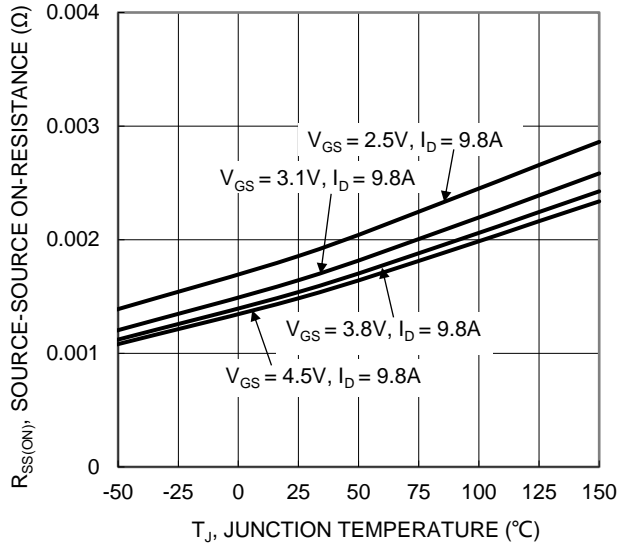


Figure 6. On-Resistance Variation with Junction Temperature



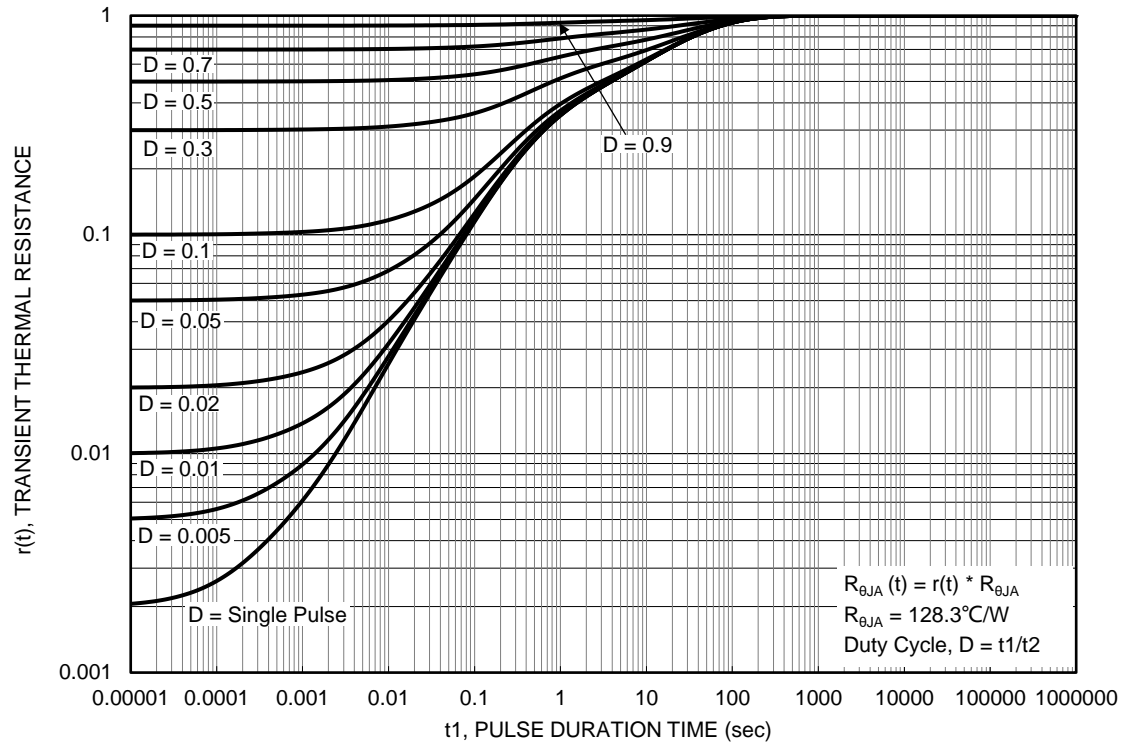
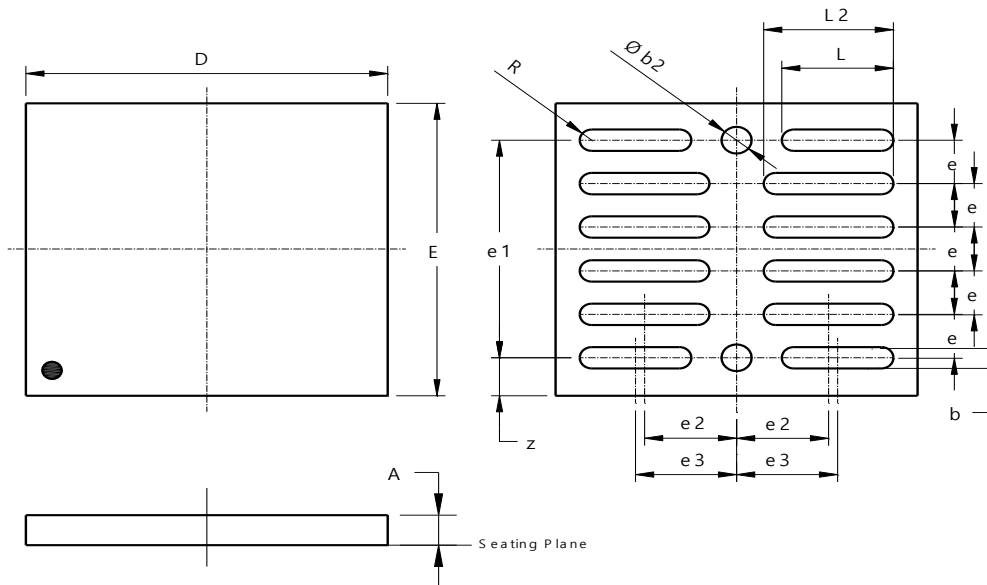


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

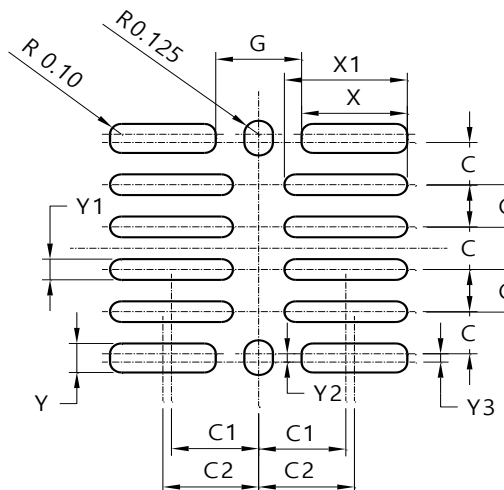
X2-TSN3027-14



Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

X2-TSN3027-14



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